

English translation of JP11239458 A (MIYABE et al.)

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TITLE: FINE SOYBEAN CURD REFUSE, ITS PRODUCTION AND FOOD USING THE SAME

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ABSTRACT:

PROBLEM TO BE SOLVED: To obtain fine bean curd refuse having a good flavor and a creamy taste.

SOLUTION: This fine bean curd refuse is produced by allowing a rotary blade type shear force to act on swollen soybeans to finely grind into particles having an average particle diameter of 20-100

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Notes:

1. Untranslatable words are replaced with asterisks (\* \* \*).
2. Texts in the figures are not translated and shown as it is.

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## FULL CONTENTS

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### [Claim(s)]

[Claim 1] Make rotary cutter type shearing force a swelling soybean act, post-friction shearing force is made for the miniaturized bottom to act on the mean particle diameter of 20-100 microns, and the mean particle diameter of the miniaturized bottom is tofu lees to 15-40 microns.

[Claim 2] The manufacturing method of the tofu lees characterized by making rotary cutter type shearing force a swelling soybean act, making post-friction shearing force the miniaturized bottom act on the mean particle diameter of 20-100 microns, and mean particle diameter miniaturizing to 15-40 microns.

[Claim 3] The manufacturing method of Claim 2 on which rotary cutter type shearing force or/and friction shearing force are made to act twice or more.

[Claim 4] Tofu-lees utilization food with which made rotary cutter type shearing force a swelling soybean act, post-friction shearing force was made for the miniaturized bottom to act on the mean particle diameter of 20-100 microns, and mean particle diameter used tofu lees together with a flour alternative or flour to 15-40 microns in the miniaturized bottom.

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### [Detailed Description of the Invention]

#### [0001]

[Field of the Invention] This invention relates to tofu lees with creamy taste with sufficient flavor, and its utilization food.

#### [0002]

[Description of the Prior Art] Although tofu lees are used as edible in part from the former and also they are used as feed and a fertilizer, the capacity factor is low and the effective use is called for.

[0003] Even if it sees the tofu lees themselves nutritionally, per solid content, it is 38% of a carbohydrate, 35% of protein, and 22% of fats and oils about, and 90 percent or more in a carbohydrate is excellent also in the physiology functional side with the dietary fiber, it is the lack of policy which is considered as industrial waste too much, and the application study to the intensive use, especially food is advanced.

[0004] Moreover, tofu lees are, in order that there may be a rough deposit generally and taste may not necessarily improve the taste and taste of such tofu lees well. The method of grinding in the condition as it is and adding in a food-processing raw material with slurry of the shape of a particle of 100 microns or less and *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne. is proposed, without adding water to raw tofu lees (JP,S61-50578,B).

[0005] Moreover, the tofu-lees workpiece characterized by consisting of a high viscosity liquid which contains the cut tofu-lees fiber and the water-soluble polysaccharide emitted from tofu-lees fiber in JP,H7-51014,A is proposed.

#### [0006]

[Problem(s) to be Solved by the Invention] This invention aimed at obtaining tofu lees with

creamy taste with sufficient flavor. Moreover, it aimed at using for the food using flour taking advantage of the feature of these tofu lees.

[0007]

[Means for Solving the Problem] this invention person etc. is the manufacture method (after soybean immersion) of the conventional tofu lees as a result of wholeheartedly investigation that said technical problem should be solved. In crushing and separation, since the cell wall of a soybean was mashed by crushing, the flavor of the tofu lees obtained by reactions, such as an enzyme, was bad, and moreover, since particle diameter was large, the knowledge from which creamy smooth taste is not obtained was acquired. Moreover, the knowledge from which neither the flavor made into the object nor taste is acquired however it may carry out grinding etc. and may miniaturize the tofu lees obtained by the conventional method was acquired.

[0008] As a result of investigation, make the rotary cutter type shearing force where the soybean swollen with a phase, i.e., water, or a molten bath before once separating into tofu lees can carry out beating of the cross section of a soybean organization smoothly act it wholeheartedly, and Then, after [ miniaturized (mean particle diameter of 100 microns or less) ] carrying out, It miniaturized further according to friction shearing force, and when carrying out separation clearance of the soy milk, the knowledge which can obtain the target tofu lees is acquired and it came to complete this invention. Moreover, when flour-substituting, or using these tofu lees together and using them for flour utilization food, the knowledge from which the flour utilization [ with the soybean origin stinking moreover / with little sufficient flavor ] food with sufficient taste without a rough deposit as for which a thing reaches to an extreme is obtained is acquired, and it came to complete this invention.

[0009] That is, this invention makes rotary cutter type shearing force a swelling soybean act, post-friction shearing force is made for the miniaturized bottom to act on the mean particle diameter of 20-100 microns, and the mean particle diameter of the miniaturized bottom is tofu lees at 15-40 microns.

[0010] Moreover, this invention is the manufacturing method of the tofu lees characterized by making rotary cutter type shearing force a swelling soybean act, making post-friction shearing force the miniaturized bottom act on the mean particle diameter of 20-100 microns, and mean particle diameter miniaturizing to 15-40 microns.

[0011] The tofu lees used for this invention have making rotary cutter type shearing force or/and friction shearing force act twice or more, and manufacturing them and the desirable tofu lees manufactured by making it such.

[0012] Moreover, this invention is the tofu-lees utilization food with which made rotary cutter type shearing force a swelling soybean act, post-friction shearing force was made for the miniaturized bottom to act on the mean particle diameter of 20-100 microns, and mean particle diameter used tofu lees together with a flour alternative or flour to 15-40 microns in the miniaturized bottom.

[0013]

[Embodiment of the Invention] First, the tofu lees of this invention and its manufacturing method are explained. The swelling soybean of this invention transforms itself from a soybean preferably, dehypocotyl of it can be carried out and the soybean swollen by being immersed in water or boiling water can be used for it.

[0014] It is important that make rotary cutter type shearing force this swelling soybean act, make post-friction shearing force the miniaturized bottom act on the mean particle diameter of 20-100 microns, and mean particle diameter miniaturizes to 15-40 microns. A miniaturization needs to

carry out to a swelling soybean. By that of the miniaturized bottom, neither creamy taste nor the outstanding flavor is obtained in what was once divided into tofu lees.

[0015] The breakage to a cell wall is appropriate for a miniaturization few by using together rotary cutter type shearing force and friction shearing force. In a miniaturization which tears off the organization of the conventional soybean, an enzyme leaks out from a cell wall and disagreeable flavor occurs.

[0016] As rotary cutter type shearing force, like a commitment roll (trade name), are the miniaturized (a detailed cut or detailed decision) means to carry out about a swelling soybean with the cutting edge of sharp a large number which rotates at high speed, and mean particle diameter 100 or less 20-100 microns of made miniaturized means are preferably suitable until it becomes 30-70 microns still more preferably. It is more desirable to carry out to increase the number of cut cutting edges for this reason, or to change a cut number of cutting teeth etc., and to perform the miniaturization by two or more steps of cuts. Effect of the cell wall breakage by the following friction shearing force can be lessened, and tofu lees with creamy taste with sufficient flavor can be obtained.

[0017] Subsequently, it is appropriate that make friction shearing force act and the mean particle diameter of 15-40 microns miniaturizes further the detailed material having cut minutely. Since it cuts and miniaturizes and is square in the shape of a section, a miniaturization is spherically made efficiently according to friction shearing force, and tofu lees with creamy taste with sufficient flavor can be obtained. Although there is no destruction which printed and crushed the cell etc. only at the miniaturization by rotary cutter type shearing force, since the cut edge is sharp, the taste of the obtained tofu lees is deficient in a creamy feeling. Then, it becomes the creamy taste the rough edge of the character with was rounded off by making friction shearing force act further.

[0018] Although a grinding machine like my KOROIDA can also be used as a means to make friction shearing force act, a homogenizer is suitable and the high voltage homogenizer which can be processed by a square centimeter in 150-300kg /especially preferably 100-400kg/square centimeter is preferably suitable. Because, in a low voltage homogenizer, when the slurry particle diameter after rotary cutter type shearing is large, treatment of two or more steps of multistage stories is needed for making it fall to the particle diameter of setting out, and the flavor of tofu lees falls. however, if a pressure is too high, when particle diameter will become fine too much and soy milk and tofu lees will be separated, discreteness falls -- you should carry out point consideration.

[0019] As a rule of thumb of the particle diameter by friction shearing force, post-friction shearing force is made for the miniaturized bottom to act, and 15-40 microns of mean particle diameter is preferably suitable for 20-30 microns. It is because the discreteness when separating soy milk and tofu lees will fall if particle diameter becomes fine too much as stated previously.

[0020] Next, the utilization food of the detailed tofu lees of this invention is explained. It can substitute for the detailed tofu lees of this invention which can use the detailed tofu lees of this invention for the food using flour with all or a portion of flour, and they can be used.

[0021] As illustration of the food using flour, baked confectionery, such as bakery products, such as food with a batter, an as-you-like-it pancake, octopus dumplings, and a bread, and a biscuit, a flower paste, etc. can be raised.

[0022] Since there is viscoelasticity, when a portion is replaced, for example as an alternative of the flour of a flower paste, there is no rough deposit of taste, and it is creamy, and it is good as a throat and savory [ compared with well-known tofu lees feeling rough, the tofu lees of this

invention are creamy and / as ].

[0023]

[Example] A work example explains the embodiment of this invention hereafter.

It is rotary cutter type shearing force about what added ten copies of water to the work-example 1 self-renewal dehypocotyl soybean 1 weight part (the following, part), and added three copies of hot water (90 degrees C) to one copy of self-renewal dehypocotyl soybean (50% of moisture content) which carried out dipping more than for 60 minutes, and fully absorbed water at 40 degrees C. It processed twice using the commitment roll (made by URSCHEL) which carries out a fragment, and grinding slurry with a mean particle diameter of 45 microns was obtained.

[0024] The obtained slurry was processed twice by a square centimeter in 200kg /with the high voltage homogenizer (made by APV) next, and detailed soybean slurry with a mean particle diameter of 25 microns was obtained. Centrifugal separation of this detailed soybean slurry was carried out, and soy milk and tofu lees were obtained.

[0025] It was 25 microns in mean particle diameter of obtained Ocala. In addition, measurement of particle diameter was based on the Coulter counter method.

[0026] 20g (one egg) of work-example 2 egg yolks were stirred, and it was made solution form voice, and 200ml of water was added there, and 100g and 160g of flour were added to it, and it mixed with the tofu lees of a work example 1 uniformly at it, and was considered as tofu-lees batter liquid. Moreover, it was considered as "commercial tofu-lees batter liquid" instead of the tofu lees (un-drying) of a work example 1 using commercial tofu lees (mean particle diameter is 200 microns by un-drying). As a reference standard, 20g of egg yolks, 200ml of water, and 170g of flour were used as standard batter liquid.

[0027] The peeling black tiger shrimp without heads was immersed in these three kinds of batter liquid, the oil butterfly was carried out for 3 minutes at 180 degrees C, and the fried shrimp was obtained. A result is shown in Table 1.

[0028]

[Table 1]

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----- Batter liquid Reference standard  
Commercial tofu lees Work example 1 (s) Batter liquid Tofu-lees batter liquid -----  
----- Condition of a ground Standard state Ocala is a separation state.  
close to a standard state fly article color tone standard color standard color the taste near a  
standard color -- [ commercial item / (standard standard s) and a standard standard commercial  
item / resistance to the teeth ] Resistance to the teeth With no rough deposit It is rough, is and is  
flavor. Standard taste Standard taste It is more delicious than (s). (mellow)

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----- The clothes of the batter of the fried shrimp  
using tofu lees with this particle diameter small compared with tofu lees as mentioned above  
with commercial large particle diameter were [ that there is no rough deposit and flavor is also  
mellow and ] delicious though it was the resistance to the teeth carried out snappily.

[0029] 200g (four eggs) of work-example 3 whole eggs were stirred, and it was made solution  
form voice, and 800ml of water was added there, and 400g and 400g of flour were added to it,  
and it mixed with the tofu lees of a work example 1 uniformly at it, and was considered as the as-  
you-like-it pancake ground. It was considered as the commercial tofu-lees as-you-like-it pancake  
ground instead of the tofu lees of a work example 1 using commercial tofu lees. 200g of whole  
eggs, 400ml of water, and 400g of flour were made into the standard as-you-like-it pancake  
ground as a reference standard. 70g of neglect happiness-in-the-next-life grounds were burned  
for these as-you-like-it pancake ground about 2 minutes with the hot plate immediately after

ground preparation for 1 hour and 2 hours, respectively. A result is shown in Table 2.

[0030]

[Table 2]

	Reference standard	Commercial tofu lees
Work-example 1	tofu lees (s)	As-you-like-it pancake ground
		As-you-like-it pancake ground
		ground condition Standard ground

no stickiness in a ground. Standard ground taste

It is considered as immediately after O\*\* MOCHITSU. O software It is considered as \*\*  
MOCHITSU after 1 hour. \*\*O x\*\*O after 2 hours (flavor) Immediately after O\*\* O 1 hour after  
O \*\* O 2 hours after O \*\* O ----- however -- O  
Those very good with commodity value O With no good \*\* commodity value with commodity  
value x With no very bad commodity value -----

[0031] The as-you-like-it pancake using detailed tofu lees with particle diameter small compared  
with the commercial large tofu lees of particle diameter was a delicious thing which soft light  
crunchness carries out, even if time passed also immediately after burning. namely, -- there is no  
rough deposit and there is also no smell of soybean origin -- flavor -- having excelled .

[0032]

[Effect of the Invention] Tofu lees with creamy taste with sufficient flavor can be obtained now  
by this invention. Moreover, the various food which excelled the case where the conventional  
tofu lees were used in flavor and taste can be obtained now by using these tofu lees for flour  
utilization food etc.

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[Translation done.]